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STATION NOTES
CENTRAL STATES FOREST EXPERIMENT STATION
COLUMBUS 15, OHIO

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YOUNG PINE PLANTATION THINNINGS YIELD MERCHANTABLE PRODUCTS

During the spring of 1948, a 13-year-old shortleaf pine plantation on the Kaskaskia Experimental Forest in the southern Illinois uplands was thinned and pruned. The objectives were: to maintain or increase growth of the stand, to concentrate growth on the quality trees left for future harvest, and to determine the volume and value of the first-thinning products.

Before treatment the plantation contained 12.7 cords per acre, representing an average annual growth of almost 1 cord per acre. The average tree was 3.9 inches in diameter at breast height and 26.2 feet tall. The untreated stand contained 1,126 stems per acre, which was reduced to 919 stems by thinning (table 1).

Table 1.--Number of trees and basal area per acre by crown class

Crown class	Number of trees			Basal area, sq. ft.		
	Original stand	Cut	Residual stand	Original stand	Cut	Residual stand
Dominant	200	55	145	29	8	21
Codominant	650	145	505	65	16	49
Intermediate	188	7	181	9	1	8
Suppressed	88	0	88	2	0	2
Total	1,126	207	919	105	25	80

PLANTATION TREATMENT

Thinning.--The basal area or stocking that will provide optimum quality growth of shortleaf pine plantations in the uplands of southern Illinois must eventually be determined. Research conducted in other regions 1/ 2/ indicates that a basal area of 80 square feet per acre may be a practical minimum for optimum stocking of young southern pine plantations when short-cutting cycles are used. This stocking was used as a guide in thinning the plantations.

Inspection prior to marking the stand for thinning indicated that this level of stocking could be reached and that in the process some marketable

1/ Averell, James L. Rules of thumb for thinning loblolly pines. Jour. Forestry 43:649-51. 1945.

2/ Ware, L. M., and Stahelin, R. Growth of southern pine plantations at various spacings. Jour. Forestry 46: 267-274. 1948.

products could be harvested. In selecting the trees to be cut, consideration was given to stem and crown spacing, crown position, and form. The better trees in the dominant and codominant crown classes, and practically all of the trees in the intermediate and suppressed classes were left in the plantation. Since the intermediate and suppressed trees occupied only 12.5 percent of the basal area in the thinned stand (table 1), they should not seriously compete with the more important upper-story trees. If the uncut trees in these two classes respond to release, they can be removed in future improvement or harvest cuts. If they do not respond, they will probably die within a few years. Inasmuch as the value of the products obtainable from them seldom equals the cost of harvesting, their natural death thus saves the cost of cutting.

Projection of current growth of the untreated stand, without allowing for subsequent growth acceleration because of treatment indicates that the plantation will contain 135 square feet of basal area in five years. Thus a second thinning should be due before 1953 if only the prethinning growth rate is maintained.

Pruning.--A total of 438 trees in the dominant and codominant crown classes in similar shortleaf pine stands on the Kaskaskia Experimental Forest were pruned to a height of 17 feet. This treatment provided for one clear 16-foot log and left, on the average, about one-third of the live crown. Subsequent measurements on these trees indicate that as much as two-thirds of the live crown can be removed without seriously retarding height and diameter growth.

PRODUCTS HARVESTED

On a per-acre basis, the 207 cut trees yield 240 marketable fence posts, 7 feet long and 3 inches or larger in diameter. At 5¢ per post, the stumpage value of the harvested trees was $12 per acre, representing a gross earning of almost $1 per acre per year. These same trees contained 3.7 cords of pulpwood per acre. Since local markets for pine pulpwood do not exist, the stumpage value for this product could not be estimated. The stumpage value of products harvested in this thinning probably did not liquidate all costs of the plantation to date. However, this value plus that of the materials to be removed in the next thinning should cover all costs and provide a small profit.

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